What is claimed is:

1. An image display apparatus for displaying an input image whose pixel arrangement is an orthogonal arrangement by converting the image into an image in a non-orthogonal arrangement, the apparatus comprising:

a display device having a non-orthogonal arrangement type screen on which an electrode matrix for controlling a display is arranged;

a band limitation filter for performing an operation for narrowing a space frequency range of image data that represent the input image;

an arrangement conversion circuit for performing an operation for converting a pixel arrangement of an output of the band limitation filter from the orthogonal arrangement into a cell arrangement of the screen; and

a driving circuit for applying a drive voltage to the electrode matrix in accordance with an output of the arrangement conversion circuit.

2. The image display apparatus according to claim 1, wherein the arrangement conversion circuit performs an operation that works both for conversion of the pixel arrangement and for conversion of a resolution.

3. An image display apparatus for displaying an input image whose pixel arrangement is an orthogonal arrangement by converting the image into an image in a non-orthogonal arrangement, the apparatus comprising:

a display device having a non-orthogonal arrangement type screen on which an electrode matrix for controlling a display is arranged;

an image conversion circuit for performing an add operation with weighting that is for narrowing a space frequency range of image data that represent the input image and is for converting the pixel arrangement from the orthogonal arrangement into a cell arrangement of the screen; and

a driving circuit for applying a drive voltage to the electrode matrix in accordance with an output of the image conversion circuit.

4. The image display apparatus according to claim 3, wherein the image conversion circuit performs the add operation with weighting that works for limiting the space frequency, for converting the pixel arrangement and for converting a resolution.

5. The image display apparatus according to claim 3, wherein the screen includes three types of cells having different light emission colors, a cell position in the column direction is shifted between the neighboring cell columns having the same light emission color of cells that constitute each column of the matrix display on the screen, and the image conversion circuit performs the add operation with weighting on the image data so that the space frequency range of at least one light emission color is different from that of the other light emission color.

6. The image display apparatus according to claim 3, further comprising a controller for switching a process of the image conversion circuit, and the image conversion circuit performs the add operation with weighting for limiting the space frequency of the image data when a first mode is designated by the controller and performs

the add operation with weighting without limiting the space frequency of the image data when a second mode is designated by the controller.

7. An image filter that is used for a display by a delta arrangement type screen including a plurality of pixels, wherein

the filter converts an input image into an image suppressing a space frequency component that exceeds a Nyquist limit determined by three elements including a pixel pitch of the screen in the vertical direction, a pixel pitch of the screen in the horizontal direction and weights that are preset in the vertical direction and in the horizontal direction.

8. An image filter that is used for a display by a delta arrangement type screen including a plurality of pixels, comprising:

a multiplying portion for multiplying a data value of an input image by a coefficient; and

an adding portion for adding N products obtained by the multiplying portion, wherein the image filter performs a neighborhood operation for calculating display luminance values of the pixels on the screen from luminance values of N data points in the input image, and delivers an image whose space frequency is suppressed outside a Nyquist limit that is determined by a pixel pitch of the screen in the vertical direction, a pixel pitch of the screen in the horizontal direction and weights that are preset in the vertical direction and in the horizontal direction.

9. An image conversion method that is used for a display by a delta arrangement type screen including a

plurality of pixels, the method comprising:

performing a neighborhood operation for calculating display luminance values of the pixels on the screen from luminance values at N data points in the input image as an operation for converting an input image into an image whose space frequency is limited;

making a data point pitch in the vertical direction of the input image be a half of a pixel pitch y_0 in the vertical direction of the screen and a data point pitch in the horizontal direction of the input image be a half of a pixel pitch x_0 in the horizontal direction of the screen; and

multiplying a luminance value at the data point of the input image by a coefficient ρ_j in the neighborhood operation, the coefficient ρ_j being defined by the following expression

$$\rho_j = \frac{1}{N}\left\{\frac{1}{2}\sum_j \omega_j + 1\right\} - \frac{1}{2}\omega_j$$

where ω_j is an integral value within an area σ of a preset Nyquist limit, which is defined by the following expression

$$\omega_j = -\frac{x_0 y_0}{2}\int_\sigma \exp(-2\pi i \mu \xi_j)\exp(-2\pi i \nu \psi_j)d\mu d\nu$$

where ξ_j and ψ_j are components of coordinates (ξ_j, ψ_j) of a position of the coefficient ρ_j with respect to a pixel whose intensity is to be calculated, while μ and ν

are components of coordinates (μ,ν) in a frequency space.

10. The image conversion method according to claim 9, wherein in the neighborhood operation, the coefficient ρ_j is replaced with an approximate coefficient having an error less than 11.3% to the coefficient ρ_j, so that the luminance value at the data point of the input image is multiplied by the approximate coefficient.

11. The image conversion method according to claim 10, wherein the input image is one of plural fields that constitute a frame of an interlace format.

12. The image conversion method according to claim 10, wherein the screen includes plural pixels having different display colors, and in the neighborhood operation the coefficient that is used for multiplying the luminance value at the data point of the input image is changed for each display color of the pixel.

13. The image conversion method according to claim 10, wherein in the neighborhood operation a coefficient set including plural coefficients are used repeatedly in accordance with a regularity of the pixel arrangement on the screen.

14. The image conversion method according to claim 10, wherein the coefficient has a value obtained by a calculation assuming a pixel position on the screen is shifted from a real position.

15. An image conversion method that is used for a display by a delta arrangement type screen including a plurality of pixels, the method comprising:

performing a neighborhood operation for calculating display luminance values of the pixels on the screen from

luminance values at N data points in the input image as an operation for converting an input image into an image whose space frequency is limited;

making a data point pitch in the vertical direction of the input image be not a half of a pixel pitch y_0 in the vertical direction of the screen or a data point pitch in the horizontal direction of the input image be not a half of a pixel pitch x_0 in the horizontal direction of the screen; and

multiplying a luminance value at the data point of the input image by a coefficient ρ_j in the neighborhood operation, the coefficient ρ_j being defined by the following expression

$$\rho_l = \frac{\sum_j \chi^{-1}{}_{lj}}{\sum_{j,k} \chi^{-1}{}_{jk}} \left\{ \frac{1}{2} \sum_{j,k} \chi^{-1}{}_{jk} \omega_k + 1 \right\} - \frac{1}{2} \sum_j \chi^{-1}{}_{lj} \omega_j$$

where ω_j is an integral value within an area σ of a preset Nyquist limit, which is defined by the following expression

$$\omega_j = -\frac{x_0 y_0}{2} \int_\sigma \exp(-2\pi i \mu \xi_j) \exp(-2\pi i \nu \psi_j) d\mu d\nu$$

where ξ_j and ψ_j are components of coordinates (ξ_j, ψ_j) of a position of the coefficient ρ_j with respect to a pixel whose intensity is to be calculated, while μ and ν are components of coordinates (μ, ν) in a frequency space, while $\chi^{-1}{}_{jk}$ is an inverse matrix of a matrix χ_{jk} that is

defined by an integral value within an integral area determined by ω_j and a pixel pitch and

$$\chi_{jk} = \frac{x_0 y_0}{4} \int_{-1/y_0}^{1/y_0} \int_{-1/x_0}^{1/x_0} \exp\left(2\pi i \mu\left(\xi_j - \xi_k\right)\right) \exp\left(2\pi i \nu\left(\psi_j - \psi_k\right)\right) d\mu d\nu$$

16. The image conversion method according to claim 15, wherein in the neighborhood operation, the coefficient ρ_j is replaced with an approximate coefficient having an error less than 11.3% to the coefficient ρ_j, so that the luminance value at the data point of the input image is multiplied by the approximate coefficient.

17. The image conversion method according to claim 16, wherein the input image is one of plural fields that constitute a frame of an interlace format.

18. The image conversion method according to claim 16, wherein the screen includes plural pixels having different display colors, and in the neighborhood operation the coefficient that is used for multiplying the luminance value at the data point of the input image is changed for each display color of the pixel.

19. The image conversion method according to claim 16, wherein in the neighborhood operation a coefficient set including plural coefficients are used repeatedly in accordance with a regularity of the pixel arrangement on the screen.

20. The image conversion method according to claim 16, wherein the coefficient has a value obtained by a calculation assuming a pixel position on the screen is shifted from a real position.